

Serial Number:

091545, 119F

Processing Date: 7/19/02

Edited by:

Verified by: DC

(STIC staff)

☐ Changed a file from non-ASCII to ASCII☐ Changed the margins in cases where the sequence text was "wrapped" down to the next line☐ Edited a format error in the Current Application Data section, specifically:☐ Edited the Current Application Data section with the actual current number. The number inputted by the applicant was ☐ the prior application data; or ☐ other☐ Added the mandatory heading and subheadings for "Current Application Data".☐ Edited the "Number of Sequences" field. The applicant spelled out a number instead of using an integer.☐ Changed the spelling of a mandatory field (the headings or subheadings), specifically:☐ Corrected the SEQ ID NO when obviously incorrect. The sequence numbers that were edited were:☐ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:☐ Corrected subheading placement. All responses must be on the same line as each subheading. If the applicant placed a response below the subheading, this was moved to its appropriate place.☐ Inserted colons after headings/subheadings. Headings edited included:☐ Deleted extra, invalid, headings used by an applicant, specifically:☐ Deleted: ☐ non-ASCII "garbage" at the beginning/end of files; ☐ secretary initials/filename at end of file; ☐ page numbers throughout text; ☐ other invalid text, such as☐ Inserted mandatory headings, specifically:☐ Corrected an obvious error in the response, specifically:☐ Edited identifiers where upper case is used but lower case is required, or vice versa.☐ Corrected an error in the Number of Sequences field, specifically:☐ A "Hard Page Break" code was inserted by the applicant. All occurrences had to be deleted.☐ Deleted *ending* stop codon in amino acid sequences and adjusted the "(A)Length:" field accordingly (error due to a PatentIn bug). Sequences corrected:☒ Other:

Aligned amino number in Seq. 16

\*Examiner: The above corrections must be communicated to the applicant in the first Office Action. DO NOT send a copy of this form.

3/1/95

ENTERED

PH#18

RECEIVED

JUL 24 2002

TECH CENTER 1600/2900



1600

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/545,199F

DATE: 07/19/2002 P.6  
TIME: 13:33:09

Input Set : A:\PTO.DC.txt

Output Set: N:\CRF3\07192002\I545199F.raw

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4 <110> APPLICANT: Lowery E., David
5     Fuller E., Troy
6     Kennedy J., Michael
8 <120> TITLE OF INVENTION: Anti-Bacterial Vaccine Compositions
10 <130> FILE REFERENCE: 28341/6227.NCP
12 <140> CURRENT APPLICATION NUMBER: 09/545,199F
13 <141> CURRENT FILING DATE: 2000-04-06
15 <150> PRIOR APPLICATION NUMBER: 60/153,453
16 <151> PRIOR FILING DATE: 1999-09-10
18 <150> PRIOR APPLICATION NUMBER: 60/128,689
19 <151> PRIOR FILING DATE: 1999-04-09
21 <160> NUMBER OF SEQ ID NOS: 165
23 <170> SOFTWARE: PatentIn Ver. 2.0
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52 aacaatagtt ttaaacaata ttcttcatt ttttataagt aagtacttaa atataaagca 180
54 ttttcataaa tatcaataaa ggattagtt atg gca gca gag ctt aca aca gcg 233
55                               Met Ala Ala Glu Leu Thr Thr Ala
56                               1           5
60 gga tat att ggg cac cat tta gca ttc ttg aaa aca ggg gat tct ttc 281
61 Gly Tyr Ile Gly His His Leu Ala Phe Leu Lys Thr Gly Asp Ser Phe
63   10           15           20
66 tgg cat gtt cat tta gat acc ctt cta ttt tca att att tca ggt gca 329
67 Trp His Val His Leu Asp Thr Leu Leu Phe Ser Ile Ile Ser Gly Ala
68 25           30           35           40

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Input Set : A:\PTO.DC.txt

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74 gtg cct agc aag atg caa tgt ttt gtt gag ata atg gtt gat tgg att 425
75 Val Pro Ser Lys Met Gln Cys Phe Val Glu Ile Met Val Asp Trp Ile
76          60          65          70
78 gat ggg atc gta aaa gaa aat ttc cat ggt cct cgt cat gct gtt gga 473
79 Asp Gly Ile Val Lys Glu Asn Phe His Gly Pro Arg His Ala Val Gly
80          75          80          85
82 cca tta gca tta act att ttc tgc tgg gta ttc att atg aat gct atc 521
83 Pro Leu Ala Leu Thr Ile Phe Cys Trp Val Phe Ile Met Asn Ala Ile
84          90          95          100
86 gat ttg atc cca gta gat ttc cta cct caa tta gcc cat tta ttt ggt 569
87 Asp Leu Ile Pro Val Asp Phe Leu Pro Gln Leu Ala His Leu Phe Gly
88 105          110          115          120
90 att gaa tac tta aga gct gtt cca aca gca gat atc agt gga aca tta 617
91 Ile Glu Tyr Leu Arg Ala Val Pro Thr Ala Asp Ile Ser Gly Thr Leu
92          125          130          135
94 ggc tta tca att ggt gtc ttc ttc tta att att ttc tat aca atc aaa 665
95 Gly Leu Ser Ile Gly Val Phe Phe Leu Ile Ile Phe Tyr Thr Ile Lys
96          140          145          150
98 tca aaa ggt atg agt ggc ttt gtt aaa gaa tat acg ctt cat cct ttt 713
99 Ser Lys Gly Met Ser Gly Phe Val Lys Glu Tyr Thr Leu His Pro Phe
100          155          160          165
102 aat cat cct ttg tta att ccg gtt aac tta gcg ctt gaa tca gtc aca 761
103 Asn His Pro Leu Leu Ile Pro Val Asn Leu Ala Leu Glu Ser Val Thr
104          170          175          180
106 tta tta gca aaa cct gtt tct ttg gcg ttc cgt ctt ttc ggg aat atg 809
107 Leu Leu Ala Lys Pro Val Ser Leu Ala Phe Arg Leu Phe Gly Asn Met
108 185          190          195          200
110 tat gca ggt gaa ctt atc ttt att ctt att gca gtg atg tac atg gca 857
111 Tyr Ala Gly Glu Leu Ile Phe Ile Leu Ile Ala Val Met Tyr Met Ala
112          205          210          215
114 aat aat ttt gca ctt aat tca atg ggt att ttc atg cat ttg gct tgg 905
115 Asn Asn Phe Ala Leu Asn Ser Met Gly Ile Phe Met His Leu Ala Trp
116          220          225          230
119 gct att ttc cat att ctt gtg att acc tta caa gca ttt att ttt atg 953
120 Ala Ile Phe His Ile Leu Val Ile Thr Leu Gln Ala Phe Ile Phe Met
121          235          240          245
123 atg ctt aca gtg gtt tat ttg agt atg ggt tat aac aaa gca gaa cac 1001
124 Met Leu Thr Val Val Tyr Leu Ser Met Gly Tyr Asn Lys Ala Glu His
125          250          255          260
127 taatttttta taaacaaaac cagaccttgg gtctaaattt caatcttatg gagaacatta 1061
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133 <211> LENGTH: 264
134 <212> TYPE: PRT
135 <213> ORGANISM: Pasteurella multocida
137 <400> SEQUENCE: 2

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DATE: 07/19/2002

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TIME: 13:33:09

Input Set : A:\PTO.DC.txt

Output Set: N:\CRF3\07192002\I545199F.raw

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139 1 5 10 15
141 Phe Leu Lys Thr Gly Asp Ser Phe Trp His Val His Leu Asp Thr Leu
142 20 25 30
144 Leu Phe Ser Ile Ile Ser Gly Ala Ile Phe Leu Phe Val Phe Ser Lys
145 35 40 45
147 Val Ala Lys Lys Ala Thr Pro Gly Val Pro Ser Lys Met Gln Cys Phe
148 50 55 60
150 Val Glu Ile Met Val Asp Trp Ile Asp Gly Ile Val Lys Glu Asn Phe
151 65 70 75 80
153 His Gly Pro Arg His Ala Val Gly Pro Leu Ala Leu Thr Ile Phe Cys
154 85 90 95
156 Trp Val Phe Ile Met Asn Ala Ile Asp Leu Ile Pro Val Asp Phe Leu
157 100 105 110
159 Pro Gln Leu Ala His Leu Phe Gly Ile Glu Tyr Leu Arg Ala Val Pro
160 115 120 125
162 Thr Ala Asp Ile Ser Gly Thr Leu Gly Leu Ser Ile Gly Val Phe Phe
163 130 135 140
165 Leu Ile Ile Phe Tyr Thr Ile Lys Ser Lys Gly Met Ser Gly Phe Val
166 145 150 155 160
168 Lys Glu Tyr Thr Leu His Pro Phe Asn His Pro Leu Leu Ile Pro Val
169 165 170 175
171 Asn Leu Ala Leu Glu Ser Val Thr Leu Leu Ala Lys Pro Val Ser Leu
172 180 185 190
174 Ala Phe Arg Leu Phe Gly Asn Met Tyr Ala Gly Glu Leu Ile Phe Ile
175 195 200 205
177 Leu Ile Ala Val Met Tyr Met Ala Asn Asn Phe Ala Leu Asn Ser Met
178 210 215 220
180 Gly Ile Phe Met His Leu Ala Trp Ala Ile Phe His Ile Leu Val Ile
181 225 230 235 240
183 Thr Leu Gln Ala Phe Ile Phe Met Met Leu Thr Val Val Tyr Leu Ser
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193 <213> ORGANISM: Pasteurella multocida
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196 <221> NAME/KEY: CDS
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202 <400> SEQUENCE: 3
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205 acatggtcaa aaagtaactg aattattgaa acaaaaccaa tactctccgt tatctgtagc 120
207 acaacaagca ttagtggttat ttgcagtaga gtttggttac ttagaagaag tggacttaga 180
209 tcgtattggt tcatttgaat cagcactttt agagtatgct aaccataact atgctgattt 240
211 tatgcgtgag ttaacccaat ctggcaatta caatgatgaa attaaagagt cattaaaagg 300

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DATE: 07/19/2002

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TIME: 13:33:09

Input Set : A:\PTO.DC.txt

Output Set: N:\CRF3\07192002\I545199F.raw

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215 aaa atg gca ggt gct aaa gag ata aga acc aaa atc gcg agt gta aaa 408
216 Met Ala Gly Ala Lys Glu Ile Arg Thr Lys Ile Ala Ser Val Lys
217 1 5 10 15
219 agt aca caa aaa att act aaa gcg atg gaa atg gtt gct gcc tcg aaa 456
220 Ser Thr Gln Lys Ile Thr Lys Ala Met Glu Met Val Ala Ala Ser Lys
221 20 25 30
223 atg cgt aaa acg caa gaa cgc atg tct tct tca cgc cct tat tca gaa 504
224 Met Arg Lys Thr Gln Glu Arg Met Ser Ser Ser Arg Pro Tyr Ser Glu
225 35 40 45
227 aca ata cgt aac gtg att agc cac gtt tcc aaa gca acg att ggt tac 552
228 Thr Ile Arg Asn Val Ile Ser His Val Ser Lys Ala Thr Ile Gly Tyr
229 50 55 60
231 aag cat cca ttt tta gtg gat cgc gaa gta aaa aaa gtg ggc atg att 600
232 Lys His Pro Phe Leu Val Asp Arg Glu Val Lys Lys Val Gly Met Ile
233 65 70 75
235 gtt gtg tcc aca gat cgt ggt ctt tgt ggt ggc tta aac gtg aac ttg 648
236 Val Val Ser Thr Asp Arg Gly Leu Cys Gly Gly Leu Asn Val Asn Leu
237 80 85 90 95
239 ttt aaa act gta tta aat gaa atg aaa gaa tgg aaa gaa aaa gat gtt 696
240 Phe Lys Thr Val Leu Asn Glu Met Lys Glu Trp Lys Glu Lys Asp Val
241 100 105 110
243 tcc gtt caa ttg agt tta atc ggt tct aaa tct atc aac ttt ttc caa 744
244 Ser Val Gln Leu Ser Leu Ile Gly Ser Lys Ser Ile Asn Phe Phe Gln
245 115 120 125
247 tct ttg gga att aaa att tta acc caa gat tca ggt att ggt gat act 792
248 Ser Leu Gly Ile Lys Ile Leu Thr Gln Asp Ser Gly Ile Gly Asp Thr
249 130 135 140
251 ccc tct gtt gag cag tta att ggt tca gtc aat tct atg att gat gct 840
252 Pro Ser Val Glu Gln Leu Ile Gly Ser Val Asn Ser Met Ile Asp Ala
253 145 150 155
255 tat aaa aaa ggg gaa gta gat gtt gtg tat tta gtt tat aac aaa ttt 888
256 Tyr Lys Lys Gly Glu Val Asp Val Val Tyr Leu Val Tyr Asn Lys Phe
257 160 165 170 175
259 att aac acg atg tcg caa aag cca gta ttg gaa aaa tta att cca tta 936
260 Ile Asn Thr Met Ser Gln Lys Pro Val Leu Glu Lys Leu Ile Pro Leu
261 180 185 190
263 cca gaa tta gat aat gat gaa tta ggc gaa aga aaa caa gtt tgg gat 984
264 Pro Glu Leu Asp Asn Asp Glu Leu Gly Glu Arg Lys Gln Val Trp Asp
265 195 200 205
267 tat att tac gaa cct gat gcg aaa gta tta tta gat aat tta ttg gtt 1032
268 Tyr Ile Tyr Glu Pro Asp Ala Lys Val Leu Leu Asp Asn Leu Leu Val
269 210 215 220
271 cgt tat tta gaa tct cag gtt tat caa gca gca gtt gaa aac ctt gct 1080
272 Arg Tyr Leu Glu Ser Gln Val Tyr Gln Ala Ala Val Glu Asn Leu Ala
273 225 230 235
275 tct gag caa gcc gct cga atg gtc gcc atg aaa gca gca aca gat aac 1128
276 Ser Glu Gln Ala Ala Arg Met Val Ala Met Lys Ala Ala Thr Asp Asn
277 240 245 250 255

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Output Set: N:\CRF3\07192002\I545199F.raw

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281                260                265                270
283 caa gca agt att aca aat gaa tta aat gaa att gtt gcc ggt gca gca 1224
284 Gln Ala Ser Ile Thr Asn Glu Leu Asn Glu Ile Val Ala Gly Ala Ala
285                275                280                285
287 gca att taacaaatag aggatcggta atggcaactg gaaaaattgt acaaatcatc 1280
288 Ala Ile
290 ggtgcggtta ttgacgttga attcccacaa gatgcagtac caaaagtata tgatgcctta 1340
292 aatgttgaaa caggtttagt acttgaagtt caacaacaat taggtggtgg tgtagttcgc 1400
294 tgtatcgcaa tgggatcatc tgatggatta aaacgcggtt taagcgtaac aaatacgaat 1460
296 aacccaattt ctgttccagt gggaaacgaaa acattgggtc gtatcatgaa cgtattgggt 1520
298 gaaccaatcg atgagcaagg tgaatcgggt gcagaagaga attggtctat tcaccgtgcg 1580
300 ccaccaagtt atgaagaaca atctaacagt actgaacttt tagaaacggg aattaaagtt 1640
302 atcgacttag tttgtccggt tgcgaaaggg ggtaaagtag gtttattcgg tgggtgcgggt 1700
304 gtcggtaaaa ccgtcaatat gatggaatta atccgtaaca tcgcaattga gcactcaggt 1760
306 tactctgtct ttgcgggggt aggtgagcgt acgcgtgaag gtaacgactt ctatcatgag 1820
308 atgaaagact ctaacgtatt agataaagtg tctcttgttt atggtcaaat gaacgagcca 1880
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328 35 40 45
330 Ile Arg Asn Val Ile Ser His Val Ser Lys Ala Thr Ile Gly Tyr Lys
331 50 55 60
333 His Pro Phe Leu Val Asp Arg Glu Val Lys Lys Val Gly Met Ile Val
334 65 70 75 80
336 Val Ser Thr Asp Arg Gly Leu Cys Gly Gly Leu Asn Val Asn Leu Phe
337 85 90 95
339 Lys Thr Val Leu Asn Glu Met Lys Glu Trp Lys Glu Lys Asp Val Ser
340 100 105 110
342 Val Gln Leu Ser Leu Ile Gly Ser Lys Ser Ile Asn Phe Phe Gln Ser
343 115 120 125
345 Leu Gly Ile Lys Ile Leu Thr Gln Asp Ser Gly Ile Gly Asp Thr Pro
346 130 135 140
348 Ser Val Glu Gln Leu Ile Gly Ser Val Asn Ser Met Ile Asp Ala Tyr
349 145 150 155 160
351 Lys Lys Gly Glu Val Asp Val Val Tyr Leu Val Tyr Asn Lys Phe Ile
352 165 170 175
354 Asn Thr Met Ser Gln Lys Pro Val Leu Glu Lys Leu Ile Pro Leu Pro
355 180 185 190

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RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/545,199F

DATE: 07/19/2002  
TIME: 13:33:10

Input Set : A:\PTO.DC.txt  
Output Set: N:\CRF3\07192002\I545199F.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 1099,1104  
Seq#:27; N Pos. 375,399,423,453  
Seq#:27; Xaa Pos. 125,133,141,151  
Seq#:28; Xaa Pos. 125,133,141,151  
Seq#:35; N Pos. 981,1000,1129,1134,1144,1423,1665,1667  
Seq#:35; Xaa Pos. 219,226,269,270,274  
Seq#:36; Xaa Pos. 219,226,269,270,274  
Seq#:37; N Pos. 98,296,302,928,1007,1740,1808,1816,1820  
Seq#:37; Xaa Pos. 33,99,101  
Seq#:38; Xaa Pos. 33,99,101  
Seq#:39; N Pos. 1839  
Seq#:47; N Pos. 3084  
Seq#:72; N Pos. 452  
Seq#:90; N Pos. 25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63  
Seq#:90; N Pos. 65,67,69,71,73,75,77,79,81,83,85,87,89,91,93  
Seq#:102; N Pos. 4894  
Seq#:102; Xaa Pos. 1632  
Seq#:103; Xaa Pos. 1632

## VERIFICATION SUMMARY

DATE: 07/19/2002

PATENT APPLICATION: US/09/545,199F

TIME: 13:33:10

Input Set : A:\PTO.DC.txt

Output Set: N:\CRF3\07192002\I545199F.raw

L:129 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:1061  
L:3841 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:337  
L:3842 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:385  
L:3845 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:385  
L:3846 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:433  
L:3849 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:433  
L:3850 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:481  
L:3981 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:112  
L:3984 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:128  
L:3987 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:144  
L:5416 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:975  
L:5417 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:1023  
L:5428 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:1119  
L:5429 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:1167  
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L:5452 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:1630  
L:5526 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:208  
L:5529 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:224  
L:5535 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:256  
L:5538 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:272  
L:5612 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37 after pos.:97  
L:5613 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37 after pos.:145  
L:5628 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37 after pos.:289  
L:5629 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37 after pos.:337  
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L:5728 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38 after pos.:32  
L:5740 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38 after pos.:96  
L:5858 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39 after pos.:1806  
L:6790 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:3076  
L:9359 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:72 after pos.:420  
L:11243 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90 after pos.:0  
L:11245 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90 after pos.:60  
L:11978 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102 after pos.:4848  
L:11979 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102 after pos.:4896  
L:12306 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103 after pos.:1616



**STATISTICS SUMMARY**

PATENT APPLICATION: US/09/545,199F

DATE: 07/19/2002

TIME: 13:33:10

Input Set : A:\PTO.DC.txt

Output Set: N:\CRF3\07192002\I545199F.raw

Application Serial Number: US/09/545,199F

Alpha or Numeric: Numeric

Application Class:

Application File Date: 04-06-2000

Art Unit: 1600

Software Application: PatentIN2.0

Total Number of Sequences: 165

Total Nucleotides: 169095

Total Amino Acids: 24948

Number of Errors: 0

Number of Warnings: 38

Number of Corrections: 0

**MESSAGE SUMMARY**

341 W: 38 ((46) "n" or "Xaa" used)

N/E - Edited  
PT